

# Training Curriculum

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# The College of Ophthalmologists of Hong Kong

## A. Curriculum

- The training program should be a minimum of 6 years in a College recognized training post in ophthalmology in Hong Kong.
- The training program is divided into two parts -Basic and Higher Training.
- The Basic Training will last for at least two years.
- Basic training is considered complete only after the trainee has passed the intermediate examination and logbook inspection.
- Higher training will last for at least 4 years after completion of the basic training.
- Higher training is considered to be completed only after passing the exit examination.

In addition, the following guidelines should be observed:

- a. The period of training should preferably be continuous. A cumulative absence of less than 12 months throughout the training period is acceptable. Additional training will be required to compensate for those whose accumulated leaves are more than 12 months. All types of leave periods are included. The trainee should report the total number of leaves days taken when he/she applies for the part C and part D examination.
- b. Any break of training for more than 12 cumulative months is not allowed but the trainee may apply to the College for approval.
- c. Research and overseas training in the field of ophthalmology is encouraged but whether the period of research or overseas training can be considered as part of the training period will be left to the decision of college. However, such periods should not be accredited for more than twelve months.

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## B. Objective

- **Basic Training**

The aim of Basic Ophthalmology training is for the general acquisition of ophthalmological knowledge and surgical skills plus clinical judgement, as a continuous process, in stages under supervision that will enable the ophthalmic trainee, at the end, to handle general ophthalmological problems competently and at a high professional standard.

- **Higher training**

The aim of Advanced Ophthalmology training is for the acquisition of more advanced ophthalmic knowledge and surgical skills in various subspecialties, such that at the end the trainee can handle more difficult ophthalmic problems competently.

After completion of his/her training, the candidate is expected to be competent enough to become as general ophthalmologist with or without a special interest in a subspecialty. Management and communication skill should also be emphasized throughout the period of training.

## C. Entry requirement

- **1. Basic training (2 years)**

- a. The trainee applicant should be a registered medical practitioner with the Hong Kong Medical Council.
- b. The trainee applicant should preferably have good corrected eyesight, normal colour vision and good binocularity to facilitate their training and their future career in ophthalmology.

- **Higher Training (4 years)**

- a. The candidate must meet all the requirements as for basic training.
- b. Candidate should have completed his/her basic training successfully and passed the intermediate examination and logbook inspection.

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## D. Examination structure

- **Intermediate examination**

### Part A

Format: Basic sciences related to ophthalmology, optics, ophthalmic investigative techniques and generic issues of medical practice (Written)

Time to be taken:

- Possession of a medical qualification acceptable by the medical council of Hong Kong.
- Completed at least 12 months of basic ophthalmic training

### **Exemption from Part A examination**

1. The College of Ophthalmologists of Hong Kong registered Trainee who passed the Part 1 fellowship examination of the Royal College of Ophthalmologists from January 2019 onwards will be exempt from Part A examination of the College of Ophthalmologist of Hong Kong
2. The College of Ophthalmologists of Hong Kong registered Trainee who passed both the Visual Sciences (Part A) and Optics, refraction & Instrument (Part B) examinations in English language of the International Council of Ophthalmology from January 2019 onwards will be exempt from Part A examination of the College of Ophthalmologist of Hong Kong

### Part B

Format: clinical refraction, clinical examination, oral and written.

Time to be taken:

- Completed at least 20 months of basic ophthalmic training.

After failure of 4 times in part A or part B examination after entering into recognized ophthalmic training post, the candidate may not be allowed to sit for the examination unless with special permission of the education committee.

- **Exit examination**

### Part C

Format: written, oral and clinical

Time to be taken: Completed after at least 3 years of higher training

### Part D

Format: log book inspection and assessment

Time to be taken: Completed after at least 4 years of higher training

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## E. Logbook

- Logbooks should be obtained as soon as an ophthalmic trainee is accepted for training
- Logbooks must be available for inspection by the trainers regularly. Accurate data entry is essential.
- Yearly review of the logbook is required.

## F. Publication

- Trainee is required to have at least one article (excluding letter to editor) published in either a peer review indexed journal or the Hong Kong Journal of Ophthalmology
- Trainee need to be the first author (or second author) of the article
- The article (must be related to ophthalmology) concerned must be published before the trainee can attend the part D examination

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## G. Acquisition of knowledge and skills for various stages

### **Basic Training (2 years)**

- Diagnostics skills: acquisition and exposure to skills and knowledge in performing the following and accurate interpretation of clinical signs observed by such:
  - a. Visual function tests:
    - Accurate assessment of patient's visual acuity and trial of lenses.
    - Colour vision examination
    - Visual field examination.
  - b. Refraction. (Subjective and Objective)
  - c. Ophthalmic examination techniques, such as assessment of eye movements, the palpebral aperture levator excursions, pupils, directed general medical and neurological examination.
  - d. Biomicroscopic methods, such as slit lamp, operating microscope, applanation tonometry gonioscopy and slit lamp funduscopy.
  - e. Funduscopy techniques such as direct and binocular indirect ophthalmoscopy with scleral indentation.
  - f. Detection, correlation and interpretation of relevant clinical findings and investigation of proper management of patients. Discussion with patients and/or their relatives regarding their medical conditions and bedside etiquette to enhance a patient doctor relationship are emphasized.
  - g. Updating and understanding the knowledge of various new investigative instruments/operative instruments is strongly encouraged.
  - h. Exposure to other investigative or therapeutic procedures such as contact lens fitting, low vision aids, orthoptic instrumentations, corneal topography, fundus photography, fluorescein angiography, ultrasonography, optical coherence tomography, electro-diagnostic and neuroimaging techniques are to be expected.
  - i. Trainees are required to learn basic principles of structural and microscopic changes of tissues in various eye diseases and pathology and the approach to therapy.
  - j. Understanding (acquire knowledge) of different means of myopia control.

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- Surgical skills and operations:  
The trainee is expected to have exposure to the following operation mainly as an assistant:
  - a. Emergency operations
  - b. Intraocular operations including cataract extractions and glaucoma surgery
  - c. Paediatric ophthalmic operations like squint surgeryThey may on occasions be allowed to perform operations under the supervision of their trainers.  
At the end of this stage, the trainee is expected to achieve the following clinical skills:
  - a. Competence in pre and post-operative management of ophthalmic patients.
  - b. Acquisition of knowledge of giving premedication to ophthalmic patients and of obtaining preoperative informed consent by giving careful explanation to patients and/or their relatives of the possible outcome and complications of individual operations.
  - c. Doing minor procedures.
  - d. Acquisition of aseptic technique, proper draping, avoid external pressure on eye ball during operations etc.
  - e. Knowledge of ophthalmic surgical instruments and their respective usage. Careful handling of instruments will be strongly stressed.
  - f. Acquisition of microsurgical techniques, instrumentation, and understanding of the maintenance and operation of the microscope.
  - g. Performance of a proper suturing techniques.
  - h. Attendance of eye emergency.
  - i. Acquisition of various techniques of ophthalmic anesthesia.
  
- Exposure to various subspecialties
  - a. Cornea and external eye diseases
  - b. Vitreous retinal diseases
  - c. Glaucoma
  - d. Paediatric ophthalmology and strabismus
  - e. Oculoplastic and orbit
  - f. Medical ophthalmology
  - g. Neuro-ophthalmology
  - h. Others
  
- Possession of proper professional ethics and conduct.

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## **Higher training (4 years)**

Mainly a consolidation of the experience gained in both diagnostic skills and surgical skills during the basic training period. Some supervision may be needed in the early stages. However, more and more surgical independence may be granted as time goes by. Trainees are expected to rotate through various subspecialties to consolidate their training. These include:

1. Cornea and external eye diseases (including the principle and practice of laser refractive surgery)
2. Vitreo retinal diseases
3. Glaucoma
4. Paediatric ophthalmology and strabismus
5. Oculoplastic and orbit
6. Medical ophthalmology
7. Neuro-ophthalmology
8. Others

During higher training, the trainee may choose a subspecialty of his special interest to prepare himself for specializing in a specific field. A period of overseas training and attendance to overseas conference is highly desirable during this stage. Research is also encouraged.

## **Simulated surgical training**

Definition: simulated surgical training is the use of simulated surgical environments for resident trainee to learn and practice ophthalmic surgical procedures, or at least the key surgical steps of these procedures, prior to operating on patients in an operating theatre setting.

Suitable material for suturing practice, artificial eye, animal eyes, cadaveric eyes or computer simulated environment can all be used as media for simulated surgical training.

All simulated surgical training needs to be approved by the college or had followed the college guidelines for 'simulated surgical training for basic surgical skills' before it can be accredited and counted as part of the trainee's training.

In general, all simulated surgical training had to be done under the supervision of a college approved trainer.

Basic trainees are required to complete a COHK approved basic surgical skills simulation course within 6 months after entering the COHK training program.

Basic trainees are also required to complete a COHK approved simulated cataract surgery course before he/she attends the part B examination.

Simulated surgical training in other surgery are not mandatory but highly recommended.



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## Practical skills requirement in different subspecialty

### **Cornea and External Eye Diseases**

Topics which should be covered in Basic Surgical Training

1. Perform external examination (illuminated and magnified) and slit-lamp biomicroscopy, including drawing of anterior segment findings
2. Perform Seidel test
3. Perform tests for dry eye (e.g. Schirmer test, tear film breakup)
4. Perform punctal occlusion (temporary or permanent) or insert plugs
5. Perform corneal sensation testing (e.g. cotton-tipped swab)
6. Perform tonometry
7. Perform techniques of sampling for viral, bacterial, fungal, and protozoal ocular infections (e.g. corneal scraping and appropriate culture techniques)
8. Interpret stains of the cornea and conjunctiva (e.g. Fluorescein and Rose Bengal)
9. Perform and interpret endothelial microscopy and pachymetry
10. Manage corneal epithelial defects (e.g. pressure patching and bandage contact lenses)
11. Perform removal of a conjunctival or corneal foreign body (e.g. rust ring, tarsal foreign body)
12. Perform pterygium surgery
13. Perform an isolated corneal laceration repair (e.g. linear laceration not extending to limbus, not involving uveal or intraocular structures)
14. Perform an incisional or excisional biopsy of a lid lesion
15. Perform steps of cataract extraction under direct supervision<sup>s</sup>

Topics which should be covered in higher surgical training

1. Perform and interpret the most advanced corneal imaging and measurement techniques
2. Perform Gunderson flap
3. Perform application of corneal glue
4. Perform stromal micropuncture
5. Assist lateral tarsorrhaphy
6. Assist more complex corneal surgery (e.g. penetrating or lamellar keratoplasty, keratorefractive procedures and phototherapeutic keratectomy) and understand the postoperative management including post-keratoplasty astigmatism management and graft rejection
7. Perform cataract surgery
8. Management of intraoperative and postoperative complication of cataract extraction.
9. Assist in collagen cross linking
10. Perform secondary IOL

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## **Refractive Surgery**

Topics to be covered in higher surgical training

1. Able to perform preoperative assessment
  - a. Understand the indications and contraindications of refractive procedures
  - b. Keratoconus assessment / screening
  - c. Interpretation of corneal topography and wave front analysis
  - d. Assessment of Phakic IOL implantation
  
2. Understand the principles of the following refractive procedures:
  - a. Laser-Assisted in Situ Keratomileusis (LASIK)
  - b. Laser-Assisted in Situ Keratomileusis Extra (LASIK Extra)
  - c. Advanced Surface Ablation / LASEK / PRK
  - d. SMILE
  - e. RK /AK
  - f. Intracorneal rings
  - g. Phakic Intra-ocular Lens
  
3. Evaluation and identification of postoperative complications
  - a. Interpretation of postoperative corneal topography
  - b. Interpretation of patients' symptomatology
  - c. Management of complications
  
4. Understand the effect of corneal refractive surgery on IOL calculation

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## **Vitreo-retinal diseases**

Topics to be covered in basic surgical training:

1. Examine the fundus of the eye using appropriate techniques and accurately interpret the findings
2. Perform and interpret optical coherence tomography
3. Perform peripheral ~~scatter~~ retinal photocoagulation
4. Perform laser retinopexy for retinal breaks
5. Perform vitreous tapping and intravitreal injections

Topics to be covered in higher surgical training:

1. Interpret fluorescein and indocyanine green angiography
2. Understand the indications, risks and limitations of laser treatment. Apply appropriate laser for the management of retinal disorders and be able to perform focal and grid macular laser treatment.
3. Perform cryopexy of retinal breaks
4. Assist in scleral buckling procedures and pars plana vitrectomy procedures

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## **Glaucoma**

### Topics to be covered in basic surgical training

1. Perform slit lamp biomicroscopy, including assessment of AC depth
2. Perform Goldmann applanation tonometry, use handheld transducer-based tonometer, rebound tonometer for IOP measurement
3. Bleb morphology assessment
4. Cup disc ratio assessment
5. Indentation gonioscopy
6. Perform seidal test for bleb leak
7. Interpretation of visual field tests
8. Interpretation of OCT nerve fiber layer thickness
9. Interpretation of anterior segment OCT
10. Perform laser peripheral iridotomy
11. Perform argon laser peripheral iridoplasty
12. Administer medical therapy in the management of glaucoma

### Topics to be covered in higher surgical training

1. Assist or perform glaucoma filtration surgery, implantation of glaucoma drainage devices
2. Assist or perform bleb needling
3. Perform MMC/ Fluorouracil injections
4. Perform laser suturelysis
5. Perform laser trabeculoplasty
6. Perform laser transscleral cyclophotocoagulation
7. Management of post filtration surgery including AC reformation
8. Assessment of hypotony maculopathy
9. Management of post-filtration surgery leakage

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## **Paediatric Ophthalmology and Strabismus**

Topics which should be covered in Basic Surgical Training

1. Perform assessment of vision in neonate, infant and child
2. Perform ocular motility examination
3. Perform cycloplegic refraction in children
4. Binocular vision assessment – sensory and motor
5. Interpretation of orthoptic assessment report. Prescribe prismatic glasses
6. Assist in performing extra ocular muscle surgery

Topics which should be covered in higher surgical training

1. Perform assessment of vision in more difficult patients. (uncooperative patients, mentally impaired and non- verbal)
2. Familiar with procedural sedation safety protocol on the use of chloralhydrate for examination
3. Perform forced duction test.
4. Perform strabismus surgery, including recession and resection.
5. Assist in muscle strengthening and weakening procedure.
6. Perform Probing of nasolacrimal duct
7. Assist in Retinopathy of prematurity treatment
8. Acquire skill of using laser indirect ophthalmoscope

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## Oculoplastic and Orbit

### Topics to be covered in Basic Surgical Training

1. Perform assessment of eyelid disorder including eyelid malposition, ptosis, proptosis, epiphora.
2. Interpret normal and abnormal orbital and relevant paranasal sinus anatomy on imaging studies.
3. Eyelid wound suturing, remove periocular skin sutures, perform dressing.
4. Perform minor lid procedures (e.g., repair of small eyelid laceration not involving eyelid marginal, shave-excision of benign lesions, chalazion curettage, syringing and probing of lacrimal system).
5. perform treatment of trichiasis (e.g., epilation, electrolysis, and cryotherapy)
6. Knowledge of punctal plug insertion and removal. Lacrimal punctum snip procedures and punctoplasty after accurate assessment of indications and possible risks.
7. Knowledge of incision and drainage of the lacrimal sac.

### Topics to be covered in Advanced Surgical Training

1. Perform temporary tarsorrhaphy
2. Perform surgical correction of entropion and ectropion
3. Perform lateral canthotomy/cantholysis (during other elective eyelid procedures)
4. Perform botulinum toxin injection for blepharospasm, varies eye performance
5. Perform or assist evisceration.
6. Perform or assist enucleation
7. Assist or perform upper lid blepharoplasty, ptosis correction
8. Assist in eyelid reconstruction
9. Assist or perform lacrimal surgery (e.g. dacryocystorhinostomy (external or endoscopic), Jones tube insertion), silicone tube insertion and its removal.
10. Assist in orbitotomy for biopsy/fracture repair/decompression/tumor removal
11. Comprehensive understanding of various eyelid, lacrimal and orbital anatomy and related diseases and pathology.

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## **Medical ophthalmology**

### **Topics to be covered in basic surgical training**

1. Perform anterior chamber and vitreous tapping for diagnostic purpose
2. Perform intravitreal injection of medication
3. Perform and interpret fundus photo, OCT and ultrasound scan for the diagnosis and monitoring of ocular inflammatory diseases.
4. Know the indications, and be familiar with the complications and monitoring, of the use of corticosteroid (different routes of delivery) for the treatment of ocular inflammatory diseases.

### **Topics to be covered in higher surgical training**

1. Perform posterior subtenon or orbital floor injection of corticosteroid.
2. Perform and interpret fluorescein and ICG angiogram for the diagnosis and monitoring of ocular inflammatory diseases.
3. Know the indications, and be familiar with the complications and monitoring of the use of immunosuppressants (including biologic agents) for the treatment of ocular inflammatory diseases.

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## Neuro-ophthalmology

Topics to be covered in basic surgical training

1. Perform basic visual function tests (Visual acuity, colour vision, confrontational visual field)
2. Assessment of eye movement, including cover/uncover/alternating/prism cover tests, Hirshberg and Krimsky tests
3. Assessment of pupils, including pharmacologic testing
4. Assessments of eyelids malposition
5. Assessment of proptosis including exophthalmometry
6. Neurological examination in relation to ophthalmology, including other cranial nerves, cerebellar signs
7. Interpretation of orthoptic reports, e.g. Hess chart, tests of binocularity and fusion, use of prisms
8. Manual and automatic perimetry: indications, perform and interprets results
9. Indications for and interpretation of ocular and neuro-imaging in relation to neuro-ophthalmology
10. Perform icepack test for myasthenia gravis. Know the indications and potential complications of Tensilon and neostigmine tests
11. Know the indications, and be familiar with the complications and monitoring, of the use of corticosteroid for the treatment of inflammatory neuro-ophthalmic diseases.

Topics to be covered in higher surgical training

1. Perform Tensilon or Neostigmine tests
2. Perform forced duction and forced generation tests
3. Testing for non-organic visual loss
4. Perform Botox injection for blepharospasm, hemifacial spasm, upper lid retraction
5. Observe temporal artery biopsy
6. Know the indications for, and observe electro-diagnostics tests (e.g. visual evoked potential, electroretinogram) for evaluation of optic nerve disorder and visual loss of unknown cause
7. Know the indications and be familiar with the complications and monitoring, of the use of immunosuppressants for the treatment of inflammatory neuro-ophthalmic diseases.



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## **Active assessment**

Assessments and certifications of trainee's competency by trainers are carried out throughout the training. They are required to be submitted to the College, include a minimum of:

	Minimum requirement
Removal of corneal foreign body	5
Probing and syringing of lacrimal passage	3
Incision and curettage of chalazion	3
Excision of pterygium including at least one with anti-metabolites or one with conjunctival autograft	3
Cataract operations of which 1 is small pupil (4 mm or less) and 1 use of capsular stains	10 (Basic-3, Higher-7)
Yag capsulotomy	2
Laser peripheral iridectomy	2
Laser peripheral iridoplasty	1
Selective laser trabeculoplasty	1
Pan-retinal photocoagulation	2
Macular laser (focal/grid)	2
Laser to retinal break	2
Intravitreal injection	3

The number of each procedure required in active assessment will be revised yearly by the College if necessary.

The trainee shall fill in the relevant forms from the college with countersignature by a recognized trainer. The trainer had to be satisfied that the trainee concerned had attained a reasonable standard in performing the said procedure.

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## **Surgical experience assessment**

At the end of higher training, the surgical experience (either as an assistant or surgeon, unless specified otherwise), should include a minimum of: -

1. 200 cataract operations (100 performed as main surgeon)
2. 15 squint operations
3. 20 glaucoma operations (up to 5 needling/bleb repair or revision/goniotomy)
4. 100 laser operations, (performed independently), including:
  - 15 Yag capsulotomy
  - 15 laser peripheral iridotomy
  - 3 laser peripheral iridoplasty
  - 5 laser trabeculoplasty
  - 20 pan-retinal photocoagulations
  - 15 macular laser (focal/grid)
  - 15 laser to retinal break
5. 5 transcleral cyclophotocoagulation (performed as main surgeon)
6. 15 vitreoretinal operations
7. 3 keratoplasty operations
8. 15 oculoplastic or orbital operations
9. 3 repair of ruptured eyeball operations.
10. 10 intravitreal injection (performed independently)

The minimum surgical experience will be revised by the college every year if necessary.

The operative results and the complications should be entered into the logbook for inspection during the exit exam.

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## **Criteria for the recognition of a Training Post in Ophthalmology by the College of Ophthalmologists**

- 1) The post must be a full-time post in a Service Unit (hereafter referred as “unit”) with minimum 5 full time trainers-specializing in the field of ophthalmology.
- 2) There must be a minimum trainer to trainee ratio of 1:2.
- 3) The post must be in a unit in which the workload is in the field of Ophthalmology. It must provide adequate experience in both out-patient clinics and in-patient care.
- 4) The post must give sufficient experience of ophthalmic surgery and there must be opportunities to operate under supervision. Holder of the post should be involved in a duty roster which exposes him/her to adequate continued medical and surgical ophthalmic emergencies.
- 5) There shall be a training program preferably occupying one whole half day each week and consisting of lectures by visiting speakers, journal club meetings, case presentation and Grand Rounds.
- 6) A trainee in training program should have experience in the major specialized areas of Ophthalmology including ocular motility, Paediatric ophthalmology, Vitreo-retinal diseases, anterior segment diseases, external diseases, glaucoma, oculoplastic, orbit and neuro-ophthalmology diseases and rotations may be allowed so that such experience can be gained by the trainee, but the rotational program must be preapproved by the College.
- 7) For a trainee in higher training, time may be allocated for research projects. One of the trainers should be responsible for supervising research.
- 8) Some forms of regular medical surgical audit are essential and a trainee must keep a log book or record of his/her operative experience and overall general performance. The log book or record should regularly be inspected and commented by his/her respective trainer.
- 9) The training post must be closely associated with a hospital providing twenty-four hours accident and emergency service and should have no limitation to the management and admission of patients with ophthalmic diseases and emergencies.
- 10) The training post must be in or closely associated with a hospital in which there are twenty-four hours anaesthetic, laboratory, radiology and other diagnostic services.

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- 11) The training post must be in or closely associated with a hospital consisting of medical, surgical, Paediatric and other related specialties.
- 12) There must be suitable library facilities.
- 13) The training unit must possess a reasonable up-to-date ophthalmic equipment and instruments for the normal running of the unit.
- 14) The training unit must inform the College of any changes in the institution affecting the above criteria and also to report to the College at the beginning of January and July every year.
- 15) The training unit must have been involved in organizing either clinical examination or COHK annual revision course during each accreditation period
- 16) A trainer should have at least 2 years working experience in College of Ophthalmologist of Hong Kong recognized training centers after obtaining the fellowship of the College of Ophthalmologist of Hong Kong or the status of specialist in Ophthalmology from the Medical Council of Hong Kong